CHAPTER 4: COMPETITIVE DEVELOPMENTS IN 2000

The data in Chapter 3 show that, in 1998 and 1999, a number of well-financed CLECs appeared poised to provide ILECs with competition for local exchange service in large and Suburban markets in Texas and to slowly but steadily increase market share in Rural areas. In 2000, however, some CLECs fell on hard times, forcing some into bankruptcy, restructuring, and mergers. A number of these CLECs announced plans to reduce their efforts in local voice service in Texas. At the same time, SWBT strengthened its financial position relative to CLECs, gained substantial market share in long distance markets, and raised the prices of various non-competitive telecommunications services.

CLECs

CLECs entered Texas in large numbers in 1998 and 1999. A number of the startups were well financed, and the three largest long-distance carriers had announced their intentions to compete in local voice telephony in Texas. In the past year trends in the stock market and in the telecommunications industry have dramatically changed the dynamics of competition in local service.

FINANCIAL SIZE AND STRENGTH IN THE LATE 1990S

The financial size and strength of CLECs relative to ILECs can influence the quality and intensity of competition in local telephone service in various areas of Texas. While a large number of CLECs have entered the Texas market, if their capitalization is thin or if they are not affiliates or subsidiaries of well-capitalized firms, CLECs may not provide substantial competition to entrenched ILECs, particularly if financing for start-up firms proves difficult.

If a number of CLECs have deep pockets or are affiliates of companies with deep pockets, these firms can fight long and hard for market share if the prospects for solid profits are good. They would be in a position to finance the installation of lines, to purchase long-term contracts for UNEs, to market their services effectively, and to maintain a presence in a local market if the incumbent decided to undercut prices in an attempt to retain market share.

The survey reveals that by the end of 1999, 90 CLECs had entered the Texas market for local exchange service, as shown in Table 12.[58] The vast majority of CLECs

[58] Due to the Commission's limitations on acquiring competitively sensitive information, the number of CLECs actually providing service to paying customers at the end of 1999 is not known, and

were private companies. Of the remaining CLECs, the survey showed comparable numbers of telephone cooperatives and publicly traded firms.[59] These CLECs were competing with fifty-nine ILECs. Telephone cooperatives and small, private companies accounted for more than 80 percent of the ILECs.

Table 12 – Texas ILECs and CLECs by Type of Organization

	ILECs		CLECs	
Type of Entity	Number	Percent of Total	Number	Percent of Total
Public Companies	10	16.9%	10	11.1%
Private Companies	25	42.4%	72	80.0%
Telephone Cooperatives	24	40.7%	8	8.9%
Total	59	100.0%	90	100.0%

Source: Public Utility Commission Data Request 2000 Responses

Table 13 lists the CLECs by size of their capitalization, defined in this case as the value of debt and equity of the CLEC's parent in its most recent financial statement, which in most cases was year-end 1998 or year-end 1999.[60] Financial data on 52 CLECs were not available for this analysis. Most of these 52 CLECs were private companies, many of which do not publish their financial statements. Most of these firms likely were small with limited financial resources. They may have been niche players, gambling on quick, rapid growth, or eventually merging with another CLEC when the market consolidates.

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therefore the percentage of those replying to the Commission's data request cannot be known. Several perspectives are available on the response rate to the Commission's data request and are detailed in Appendix H. Because it is nearly impossible for a CLEC to provide services without an interconnection agreement with an ILEC, the Commission believes that a critical mass of competitive providers submitted data, based on the 73 responses that were received from the 150 companies that had interconnection agreements in place by the end of 1999, which was the close of the period for which data were requested.

[59] One of the cooperatives, Denton Electric Cooperative, is an electric, not a telephone, cooperative.

[60] Staff in the Commission's Financial Review section made a determination of which subsidiary of a company was the parent based on financial statements and experience in the industry. Staff did not contact or ask the firm directly for this information, so the Commission does not claim that the identification of the parent companies is exact. Nor did staff make an attempt to determine the market capitalization of the publicly traded companies in this survey. Thus, the figures presented in this analysis should be considered illustrative rather than definitive.

Table 13 – Capitalization of CLECs: Debt and Equity Listed in Financial Statements

Size of CLEC	Number	Percent of Total
More than $10 billion	10	11.1%
$1 billion - $10 billion	11	12.2%
$100 million - $1 billion	7	7.8%
Less than $100 million	10	11.1%
Unknown	52	57.8%
Total	90	100.0%

Source: Public Utility Commission Data Request 2000 Responses

In 1999 the Texas market had CLECs with a wide range of capitalizations, some of which are very large electric or telephone utilities. Twenty-one firms, or a quarter of all CLECs, had parent companies with $1 billion or more. Almost 70 percent of all CLECs, however, had less than $100 million in capitalization or did not publish their financial information.

The two largest ILECs listed were SWBT and GTE/Verizon, ILECs subject to customer choice. These two ILECs each had capitalizations of over $10 billion, as shown in Table 14. Almost 90 percent of all ILECs in Texas, however, had capitalizations of less than $100 million. State and federal law and regulations allow small ILECs to forgo the implementation of standard interconnection agreements. This exemption hinders customer choice in many service areas of Rural Texas.

Table 14 – Capitalization of ILECs (Debt and Equity)

Size of ILEC	Number	Percent of Total
More than $10 billion	2	1.7%
$1 billion - $10 billion	1	3.4%
$100 million - $1 billion	3	5.1%
Less than $100 million	50	84.7%
Unknown	3	5.1%
Total	59	100.0%

Source: Public Utility Commission Data Request 2000 Responses

CLECs' Investment in Infrastructure

The flood of financial capital that CLECs had at their disposal in the late 1990s allowed them to be aggressive in investing in new plant and equipment in Texas in 1999, as shown in Table 15 and Table 16. While ILECs had considerable construction expenditures in the late 1990s, many of these expenditures appear to have been offset by depreciation of existing equipment. CLECs, in contrast, increased their construction expenditures in 1999 by more than three times their 1998 expenditures, accounting for

one out of every four dollars of new investment in 1999. As a result, CLECs' share of infrastructure, as measured by net plant investment, doubled in one year to nearly ten percent in 1999.

Table 15 – Net Plant Investment

	1998		1999	
	Net Plant Investment	%	Net Plant Investment	%
ILEC	13,678,746,833	95.0%	13,849,642,077	90.5%
CLEC	713,529,978	5.0%	1,457,917,966	9.5%
Total	14,392,276,810		15,307,560,043	

Source: Public Utility Commission Data Request 2000 Responses

Table 16 – Construction Expenditures

	1998		1999	
	Construction Expenditures	%	Construction Expenditures	%
ILEC	2,396,430,541	90.8%	2,282,189,742	74.0%
CLEC	243,005,792	9.2%	800,765,765	26.0%
Total	2,639,436,333		3,082,955,507	

CLECs also invested in switching offices, as shown in Figure 14. Growth was most rapid in switching offices serving 31,000 or fewer lines. Table 17 shows that CLECs doubled the number of switching offices that served over 300,000 lines from eight in 1998 to sixteen in 1999.

Figure 14 – Comparison of ILEC and CLEC Switching Offices

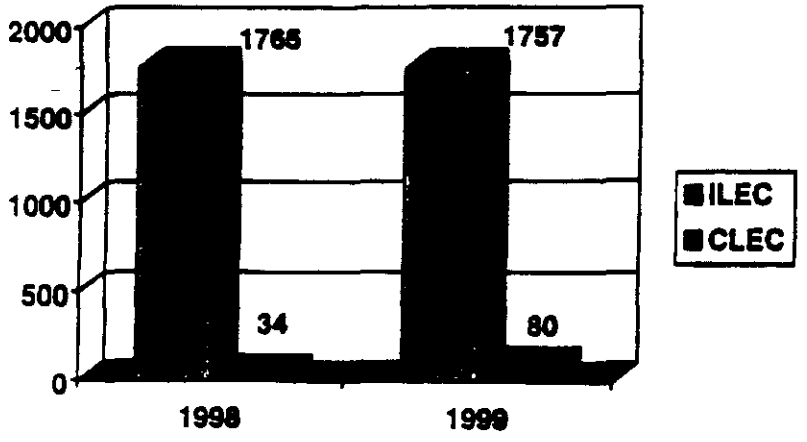

Table 17 – Comparison of Switching Offices by Size of Office

Size of Switching Office	1998		1999	
	ILEC	CLEC	ILEC	CLEC
Fewer than 3,000 Lines	928	17	914	45
3,000 to 31,000 Lines	360	8	363	16
31,000 to 100,000 Lines	100	1	103	1
100,000 to 300,000 Lines	42	0	42	2
Over 300,000 Lines	335	8	335	16
Total Switching Offices	1,765	34	1,757	80

Source: Public Utility Commission Data Request 2000 Responses

FINANCIAL STRUGGLES IN 2000

The capitalization of firms in 1998 and 1999, while consistent with the timeframe of the information in the data collection instrument, no longer presents an accurate picture of the financial condition of many CLECs.

The FTA and the increased market penetration of the Internet stimulated substantial investment in the telecommunications industry in the past two years. Capital spending by telecommunications companies in the United States is projected to exceed $100 billion in 2000, almost three times the level in 1995.[61]

According to analysts in the telecommunications industry, investment in telecommunications lines and equipment has greatly outpaced growth in revenues in 1999 and 2000. The American telecommunications industry had a negative cash flow of $20 billion in the first half of 2000, on top of a negative cash flow of $11 billion in 1999.[62]

The industry turned to capital markets to finance this investment, issuing tens of billions of dollars in stock and bonds. The telecommunications industry became a major source of investment funds. Since year-end 1998, slightly more than 50 percent, or about $10.3 billion of the $20 billion in private equity that firms poured into minority investments in public companies,, went to telecommunications firms. In 1998 and 1999, telecommunications companies issued over $50 billion in high-yield bonds.[63]

This sharp increase in investment has led to a boom and bust in share prices of CLECs. Table 18 shows the performance of the NASDAQ Telecommunications Index for the period January 1, 1998 to December 5, 2000. The index rose from 306.1 in December 31, 1997 to a peak of 1,230.1 on March 10, 2000. By early 2000 this rise in the stock market provided CLECs with large capitalizations.

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[61] "One Analyst's Grim Telecommunications View," *New York Times* (October 5, 2000).

[62] *Id.*

[63] "Telecom Sector Has Become a Black Hole for Investors," *Wall Street Journal* (October 13, 2000).

Table 18 – Performance of the NASDAQ Telecommunications Index (January 1, 1998 – December 5, 2000)

Date	NASDAQ Telecommunications Index	Increase from Previous Period	Cumulative Increase from December 31, 1997
December 5, 2000	534.4	-56.6%	74.3%
March 10, 2000	1,230.1	21.1%	301.2%
January 1, 2000	1,015.4	102.7%	231.2%
January 1, 1999	500.9	63.4%	63.4%
January 1, 1998	306.6	NA	NA

Source: National Association of Securities Dealers website, http://www.nasdaq.com, 10/31/00.

According to various reports in the financial press in the fall of 2000, investor sentiment turned sharply negative towards the telecommunications sector when CLECs were unable to convince investors that prevailing and projected profits were large enough to justify the prevailing level of investment and high share prices. In the nine months after its March 2000 peak, the NASDAQ Telecommunications Index fell 57 percent.

In the second half of 2000, CLECs found that access to capital, in the form of bank loans, issuance of debt, or initial public offerings of equity, was much more limited than it had been in the previous 18 months. The spread between telecom high-yield bonds and U.S. Treasuries (the safest debt instrument in the market) rose from 4.72 percent at the beginning of 2000 to 8.26 percent in mid-October, dramatically increasing the cost of raising venture capital for the typical small CLEC.[64]

The fall in the share prices of telecommunications companies strongly impacted some promising CLECs that had entered the Texas market. For example, four CLECs that once had a capitalization listed in Table 13 as $800 million or more in 1998 or 1999 – Covad, ICG, Rhythms, and Teligent - saw their share prices fall more than 95 percent from their 2000 peaks, as shown in Table 19. In contrast, the stock price of the leading ILEC in Texas, Southwestern Bell, was less than 10 percent off its peak in 2000.

[64] *Id.*

Table 19 – Fall in Share or Index Prices of Telecommunications Providers in 2000

Category	Peak Price in 2000	Price on December 5, 2000	Percent Change in Stock Price
NASDAQ Telecommunications Index	1,230.1	534.4	-56.6%
ILEC			
Southwestern Bell	59.0	53.4	-9.5%
Large CLECs which are Long-Distance Carriers			
AT&T	61.0	20.4	-66.6%
Sprint	67.0	23.9	-64.3%
Worldcom	51.9	14.7	-71.7%
Selected Small CLECs			
Allegiance	110.1	17.6	-84.0%
Covad	66.6	1.9	-97.1%
ICG	39.2	0.3	-99.2%
Rhythms	50.0	0.9	-98.2%
Teligent	100.0	3.5	-96.5%

Source: Yahoo! webpage, http://finance.yahoo.com; *Wall Street Journal*, December 5, 2000

Larger CLECs that are long distance carriers also faced a difficult set of problems in 2000. A significant change in the long distance arena occurred on July 10, 2000, when SWBT's affiliate SBC Long Distance entered the interLATA long distance market. Given SBC Long Distance's initial success in attracting long distance customers, combined with customer enthusiasm for one-stop shopping, the erosion of the interLATA dominance of AT&T, WorldCom, and Sprint appears to be accelerating.

By the end of October 2000, stock prices for the three largest long distance carriers fell by two-thirds from their calendar year 2000 highs. These events led long-distance carriers to reconsider their business strategies in the Texas local telephone market.

CLECs Reconsider the Texas Market

Table 20 presents a recent snapshot of the actions that key CLECs have taken with regards to the Texas local voice market. Some of these CLECs were the largest, most capitalized CLECs in the Texas in 1998 and 1999 and were considered the "shining examples" of competitors to Texas ILECs for residential customers in Texas

Table 20 – Changing Business Strategies for CLECs in the Texas Market

CLEC	Action Taken	Date Announced	Source
AT&T	Reduced presence in residential voice market, focusing on data services. Restructure/divestiture into four separate business.	10/25/00	att.com/press/item/ Seth Schiesel, "AT&T, In Pullback, Will Break Itself Into 4 Businesses," New York Times, 26, Oct. 2000. Floyd Norris, "AT&T Realigns Its Planets," *New York Times*, Oct. 26, 2000.
Sprint	Reduced presence in residential voice market, focusing on data services.	11/03/00 11/22/00	CNET News.com PUC Project No. 17475 filing: Non-Dominant Carrier Tariff revisions to Grandfather Optional Calling Plans and Extended Area Service - Sprint Local Unlimited and Global Pref.ed Extended
Worldcom	Reduced presence in residential voice market, focusing on data services.	11/01/00	2000 Test.newsbytes.com/news/00 "WorldCom to Reorganize, Focus on Internet, Data," *Dallas Morning News*, Oct. 27, 2000.
Verizon /VSSI	Amend to withdraw local service package. Reduced presence within residential voice market, focusing on data services. Withdrawal of bundled package offerings.	10/20/00 11/13/00	Vikas Bajaj, "Verizon to Close Division," *Dallas Morning News*, Oct. 20, 2000. *Application of Verizon Select Services, Inc., for an Amendment to its COA*, PUC Docket No. 23271.
Excel Communications	Intent to cease local exchange service within the Texas market.	11/20/00	Letter to Commission, Robin Johnson, Assistant General Counsel, Excel Communications.

Source: Public Utility Commission

Provided below are more details on the situations faced by the companies presented in Table 20.

AT&T

In October 2000, AT&T abandoned its ambitious but unprofitable business plan of the last three years in favor of splitting into three different companies: Wireless, Broadband (containing cable), and Business Services, which contains and will eventually spin-off Consumer Services. The Business Services division will own the AT&T name and network, while the other companies will lease the rights. AT&T's plan to deliver bundled local exchange, long distance, broadband internet, and cable television over coaxial cable lines is now defunct.[65]

AT&T is also spinning off Liberty Media, a cable programming company it acquired during its long buildup in preparation for the abandoned integrated cable services plan.[66] Some telecommunications analysts say that AT&T will eventually pull completely out of the local exchange market, which has produced lower revenues than

[65] Seth Schiesel, "For Local Phone Users, Choice Isn't An Option," *The New York Times*, at A1 (November 21, 2000).

[66] Geraldine Fabrikant, "AT&T Plans Spinoff to Cut Cable Holdings," *The New York Times* at C1 (November 16, 2000).

expected.[67] The company has also seen an 11% drop in its long distance earnings in 2000, down from $22 billion.[68] With a $62 billion debt and company stock down from a high of $61/share in 1999 to less than $20/share in November 2000, few financial analysts are predicting a quick recovery.[69]

AT&T plans to move its Consumer Services division into bundling voice and DSL, and recently appointed David Dorman, an executive with a history of taking over troubled companies, as its president. Dorman is expected to focus on maintaining quality in the Business and Consumer Services division.[70] Some analysts have alleged that bundling voice and data will not solve the company's problems, as it will not differentiate AT&T from the many other CLECs offering the same services.[71] However, in the era of deregulation, long distance does not hold the same place for AT&T as it has in the past. The BOCs are entering the market with a strong customer base. As described in Chapter Three, SWBT, in particular, has picked up over a million long distance customers in Texas since July, grabbing a 12% share of the long distance market while ceding very little of the local exchange market.[72]

Verizon

Like AT&T, Verizon is having difficulty in the competitive local exchange and long distance markets. Verizon fared better than some other major telecommunications companies, through better estimation of its profit expectations. However, local and long distance revenues are dropping for the company, which claims that data sales alone are keeping its profits aloft.[73]

Verizon's financial difficulties in the CLEC market have apparently led the company to attempt to pull out of the residential competitive local exchange market in Texas, where it services over 43,000 customers. Verizon's CLEC, VSSI, submitted an Application for Amendment to its COA in November 2000, stating its wish to "discontinue competitive local exchange services to consumers and small business customers in Southwestern Bell and former GTE service areas." The PUC is awaiting further information from Verizon, including any plans for transfer of current customers to similar plans on other local exchange carriers and a justification for retaining its COA.

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[67] Seth Schiesel, "For Local Phone Users, Choice Isn't An Option," *The New York Times*, at A1 (November 21, 2000).

[68] Deborah Solomon, "AT&T Plans Big Asset Sales to Cut Debt," *The Wall Street Journal*, at A3 (November 8, 2000).

[69] Peter Elstrom, "AT&T: Breaking Up Is Still Hard To Do," *Business Week*, at 173-174 (November 6, 2000).

[70] Deborah Solomon, "AT&T Names Telecom Veteran Dorman Head of Business, Consumer-Phone Units," *The Wall Street Journal*, at A3 (November 29, 2000).

[71] Elizabeth Starr Miller, "Consumers at the Core: AT&T to Keep Consumer Side Close to Home," *Telephony*, at 28 (October 30, 2000).

[72] Elizabeth Douglass, "Firms Giving Long-Distance Short Shrift," *The L.A. Times* (November 8, 2000), accessed via Internet, www.latimes.com.

[73] Shawn Young, "Verizon Reports Solid Results Amid Sales Growth," *The Wall Street Journal*, at B10 (October 31, 2000).

MCI WorldCom

Immediately following AT&T's split announcement, WorldCom revealed that it also will spin off its local exchange and long distance services, most of which it acquired when it merged with MCI Communications in 1998, into a separate tracking stock under the MCI name.[74] As with AT&T, some analysts contend that this is the beginning of a shift away from local service.[75] WorldCom's stock is down 75% from its 1999 peak, proportionally more than AT&T's loss.[76]

WorldCom CEO Bernard Ebbers had long presented the company as an upstart intent on taking AT&T's business, but some analysts contend that Ebbers structured his company so similarly to AT&T that he was caught in the same downdraft in long distance revenues.[77] To illustrate the cutthroat nature of the long distance environment, Ebbers described a situation in which, after MCI won a big contract for Kmart's communication business, AT&T CEO C. Michael Armstrong called Kmart and offered them service for $5 million less than WorldCom's bid, regardless of what it was. Ebbers then offered Kmart service for $2 million below AT&T's offer, which would have been, by his admission, less than profitable. AT&T lowered its bid again and won the contract.[78]

WorldCom's push towards data is evidenced in its recent acquisition of Intermedia, a leading data provider, only a few weeks after announcing the MCI spin-off. WorldCom also recently began providing high-speed internet access in Memphis through fixed wireless technology.

Sprint

Sprint profits have been steady lately, mostly due to packaging long distance with data.[79] Sprint's CLEC offers local exchange service in 21 markets throughout the nation and has announced plans to enter 80 more over the next year, mostly using fixed wireless technology.[80] Sprint is de-emphasizing traditional local exchange, however, except as part of a package.[81]

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[74] Seth Schiesel, "With WorldCom's Breakup Plan, Eerie Similarities to AT&T," *The New York Times*, at C1 (November 2, 2000).

[75] Elizabeth Douglass, "Firms Giving Long-Distance Short Shrift," *The L.A. Times* (November 8, 2000), accessed via Internet, www.latimes.com.

[76] "WorldCom's Bernie Ebbers Scrambles to Raise Cash," *The New York Times*, at C1 (November 11, 2000).

[77] Seth Schiesel, "With WorldCom's Breakup Plan, Eerie Similarities to AT&T," *The New York Times*, at C1 (November 2, 2000).

[78] David Henry and Michelle Kessler, "Competition Grows Fierce," *USA Today* (November 2, 2000), accessed via Internet, www.usatoday.com.

[79] Bruce Meyerson, "Sprint Will Not Spin Off Long-Distance," *Austin American-Statesman*, at G4 (November 4, 2000).

[80] Paul Davidson, "Competition Squeezes Out Traditional Firms," *USA Today* (November 3, 2000), accessed via Internet, www.usatoday.com.

[81] Bruce Meyerson, "Sprint Will Not Spin Off Long-Distance," *Austin American-Statesman*, at G4 (November 4, 2000).

This de-emphasis of local exchange has led the company's CLEC to cease offering residential local exchange service to new customers in Texas, as of November 27, 2000. Existing customers have been grandfathered in their service, but are not allowed to change any features or add lines at the risk of termination of service.

In October, Sprint announced plans to offer its ION (meaning "integrated on-demand") service to residential customers in Houston and Dallas. ION bundles up to four voice lines, 750 minutes of long distance, vertical telephone services, and high-speed internet access. It is unclear whether, in light of Sprint's CLEC's decision to quit offering residential local exchange service, the company will follow through with this announcement. Sprint claims that the service would cost between $120 and $150, and has been available to business customers in Dallas since June.

Excel Communications

Excel Communications is a CLEC focused mostly on long distance, wireless, and internet access, although the company has been offering voice in some areas of Texas. However, like Sprint and Verizon, Excel has just announced its intent to cease local exchange service in Texas, citing the difficulty of breaking into the CLEC market in Texas and concerns about the short-term profitability.

TXU / Fort Bend Communications and Reliant Communications

These two companies had some of the deepest pockets among CLECs, as well as electric industry parents with a strong local presence and name recognition in Dallas and Houston, two markets where CLECs had been building wireline infrastructure. These advantages were not sufficient to challenge SWBT in local service. Reliant Communications has announced that it is abandoning voice service to focus on data services. TXU / Fort Bend Communications has announced that it will limit its presence in the residential voice market to the more upscale and Suburban markets in Texas. By reducing its presence in residential voice markets, the company could focus on providing data services.

ILECs

In the past two years, ILECs have used the pricing flexibility and bundling of services that they gained in SB560 to try to retain customers. SWBT has raised prices on a variety of services that competitors do not provide.

SB 560 and Pricing Flexibility

SB 560 provided ILECs with pricing and packaging flexibility for a variety of nonbasic services to allow customers to buy a bundled product of services from one provider, also known as one-stop shopping. Through one-stop shopping, a customer can often obtain a lower price for a package of bundled services, can eliminate any aggravation associated with having multiple providers, and can consolidate multiple service charges onto one bill for billing ease. Because one-stop shopping has become

popular in recent years, ILECs and their competitors are aggressively bundling services together in various packages that appeal to customers, particularly in urban areas.[82]

ILECs, primarily SWBT and Verizon (GTE/Contel), exercised their pricing flexibility options in various ways, filing approximately 150 pricing flexibility tariffs since September 1999.[83] SWBT, in particular, offered dozens of promotions on vertical services (such as call return, Caller ID, call waiting, and speed calling) and toll services by waiving non-recurring installation charges, providing cash-back offers for customers who retain service for a minimum period, and through other incentives.

These ILECs packaged popular vertical services and toll services together in different ways that allow customers to obtain a bundle of services at a lower overall price. In September of 1999, for example, SWBT reduced prices for some toll packages, business call-management service packages, residential single-line packages, and government contracts for business lines in a range of approximately 5% to 30%. SWBT also exercised its ability to offer customer-specific pricing on many services, including long-distance services, certain high-speed digital private line services, and governmental services. By agreeing to obtain service for a fixed term, usually 1-5 years, business telephone customers benefit from lower rates offered through customer-specific contracts.[84]

Over the same period SWBT also lowered the prices of some individual services, to better compete with offerings from other providers, as shown in Table 21. For example, SWBT reduced the prices for (1) its Personalized Ring and Priority Call services by 13% to 33%; (2) its Plexar I and II offerings (central-office-based PBX-type services) by 1% to 14% in 1999, and various Plexar II ancillary features by 14% to 50% (involving decreases ranging from $.10 to $2.50) in 2000; and (3) its shorter-term digital private-line contracts (month-to-month and 1-3 years) by 6% to 22% on average. Of these, the Plexar and private line offerings are available to business customers only.

On the other hand, SWBT has significantly increased the prices for a number of nonbasic services, often services that are very popular and for which competitive alternatives are very limited. In September of 1999, SWBT raised prices on some of its

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[82] ILECs may offer their customers the following: local exchange telephone service, custom calling features and vertical services, hardware to support custom calling features and vertical services (such as the Caller ID unit that identifies a calling number), long distance service, internet service, voice messaging services and other enhanced services, cellular telephone service, high-speed private line service, digital subscriber line (DSL) service, and other services.

[83] From September 1999 through October 2000, if price increases and decreases, new services, and promotions are included in the mix, the number exceeds 175.

[84] PURA §58.003(a) prohibits some customer-specific contracts until 2003, specifically those applying to a narrow range of services offered by Chapter 58 companies, primarily for the basic local lines of business and residential customers. A Chapter 58 company can offer customer-specific pricing for most of its other services, including many vertical services and toll services. For example, SWBT's tariff currently permits SWBT to enter into customer-specific contracts with residential or business customers for any long-distance service it offers. Also, high-speed private lines are routinely offered on a customer-specific contract basis. Generally, business customers are more likely to find the long-term contracts attractive than are residential customers.

more popular business call-management services[85] in a range of approximately 6% to 42%. In November of 1999, SWBT increased the price of a business extra directory listing by 107%, from $1.45 to $3.00.[86] In June of 2000, SWBT increased its monthly rates for residential Caller ID services (caller ID name-or-number and caller ID name-and-number, both of which are very popular in Texas) in a range of 22% to 30%.[87] SWBT also raised the following rates: (1) for per-use three-way calling, from $.75 to $.95, with the $6.00 monthly cap eliminated; (2) for call return, from $.50 to $.95 per use, while eliminating the $4.00 monthly cap; and (3) for residential call blocker and residential auto redial, from $2.00 to $3.00 each per month. In late 2000, SWBT raised its analog private-line rates by an average of 15%. SWBT also recently proposed a large increase to its charge for *not* publishing a directory listing ("unlisted numbers"). Over the past two years, the price of individual vertical services tended to rise, making the package prices more attractive to customers.

Recently, the Commission established its threshold policy concerning packaging services for sale on a wholesale basis. Responding to a complaint filed by AT&T regarding SWBT's essential office package for business customers, the commission determined that an ILEC may not tie the sale of vertical services with the purchase of basic services on a wholesale basis. The Commission determined that such a pricing mechanism is presumptively an unreasonable restriction on resale that is prohibited by PURA and the FTA.[88]

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[85] Examples are three-way calling, anonymous call rejection, auto redial, call waiting, call waiting ID, and call forwarding. (The price for residential call forwarding, newly classified by SB 560 as a basic network service, has not been raised.)

[86] *Informational Filing of Southwestern Bell Telephone Company Pricing Flexibility Associated with Business Extra Listings, Pursuant to PURA § 58.15*, Tariff Control No. 21692 (November 19, 1999).

[87] *Informational Notice of SWBT for Pricing Flexibility Residence and Business Call Management (Vertical) Services; Pursuant to PURA § 58.063 and § 58.152*, Tariff Control No. 22719 (June 27, 2000).

[88] *Complaint of AT&T Communications of the Southwest, Inc. regarding Tariff Control Number 21311, Price Flexibility-Essential Office Packages*, Docket No. 21425, Final Order (December 19, 2000).

Table 21 – SWBT Price Changes Made Under SB 560†

Service	Description	Residential Prices			Business Prices	
		Old	New	Change	Old	New
Three Way Calling	Allows "on hold" & "add on" capability via switch hook	$2.10 for first, and $1.40 per additional of these services	$3.00 for first, and $2.00 per additional of these services	↑	↑	$2.50	$4.00
Call Forwarding	Permits transfer of incoming calls to another phone no.			↑	↑	$3.50	$6.00
Speed Calling 8	Permits speed dialing for up to eight programmed numbers				↓	$2.50	$1.50
Anonymous call rejection	Permits automatic rejection of anonymous incoming calls via Caller ID	$1.00	$1.00	=	↑	$1.00	$2.00
Auto Redial	Rings a called busy number when available	$2.00	$3.00	↑	↑	$3.50	$4.00
Call Waiting	Indicates an incoming call while on the line	$2.80	$2.80	=	↑	$3.25	$5.00
Call Waiting ID	Identifies name and/or number of incoming call while on line	$3.00	$3.00	=	↑	$3.00	$5.00
Caller ID Name or Caller ID Number	Shows Name or Number of Incoming Caller	$4.95	$8.50	↑	↑	$7.50	$8.00
Call Blocker	Blocks incoming calls from designated numbers	$2.00	$3.00	↑	↑	$3.00	$3.50
Speed 30	Permits speed dialing for up to 30 programmed numbers	NA	NA	↓	↓	$3.20	$2.00
Priority Call	Provides distinctive ring on calls from designated numbers	$2.50	$2.00	↓	↓	$3.00	$2.00
Personalized Ring I	Distinctive ring for an additional number on same access line	$4.00	$3.50	↓	↓	$6.00	$5.00
Call Return	Rings most recent calling number by dialing *69	$.50 each, $4.00 cap	$.95 each (no cap)	↑	↑	$.50 each $4.00 cap	$.95 each (no cap)
Three Way Calling, per use	Allows "on hold" and "add on" capabilities via switch hook	$.75	$.95	↑	↑	$.75	$.95
Call Trace, per Activation	Traces last incoming call, via activation before next call received	$8.00	$7.00	↓	↓	$8.00	$7.00
Directory Assistance – Direct Dialed	Provides directory assistance via calling 1-411; call allowances not affected	$.30 per use	$.75 per use on local calls	↑	↑	$.30 per use	$.75 per use on local calls
Directory Assistance Call Completion – Direct	Connects caller to number obtained when dialing directory assistance	$.30 per use	$.05 per use	↓	↓	$.30 per use	$.05 per use

† Old and New compares prices from August1999 through December 2000

Source: SWBT filings

Pricing and Packaging Comparisons Among Providers

Basic Service Charges

For a residential customer desiring only basic local service with no additional services (such as call waiting, call forwarding, caller ID, etc.), the minimum rates offered by the leading companies are shown in Table 22 below. Except for SWBT, most telecommunications companies do not package special long distance rates for customers seeking minimum basic service.

All cost figures are subject to fees, taxes, and surcharges, and may vary slightly among areas. Long distance packages are extra unless noted otherwise.

Table 22 – Minimum Rates for Basic Local Residential Service

Company	SW Bell	Sprint (ILEC)	AT&T	MCI
Dial Tone	X	X	X	X
Other	Optional long distance at $0.09/minute	some additional services may be available at no charge		
Cost per Month	$12-$16*	$11-$16.75*	$15	$7.75-$10.50

*Includes Subscriber Line Charge, may include mandatory Extended Area Service and Expanded Local Calling Service
Source: Public Utility Commission, Survey of company offerings as of November 28, 2000

Residential Package Comparison

Some residential customers hope to save money on local service, vertical services, and long distance through packages, which telephone companies are happy to offer to win more customers in the residential market. Table 23 shows some of the service packages offered by major telephone companies. The SWBT plan integrates many vertical services with local exchange service and a long distance plan. Sprint offers two packages, one with a set long distance plan and one that allows access to any of its pre-established long distance plans. AT&T offers a fixed long distance plan with customer choice in the number and type of vertical services. The MCI Worldcom packages offer permutations on local service combined with customer choice in different long distance plans and optional vertical services.

All packages are subject to service limitations and may not be available in all areas. All cost figures are subject to fees, taxes, and surcharges, and may vary slightly among areas.

Table 23 – Comparison of Local and Long Distance Residential Service Packages

Company	SW Bell	Sprint	Sprint	AT&T			MCI	MCI
Package	Phone Solution	Connected Solution	Custom II Solution	Local One Rate Texas			One Company Advantage 200	One Company Advantage 7
Dial Tone	X	X	X	X			X	X
Long Distance Cost per Minute	$0.06	100 minutes included, $0.10 over 100 minutes	Choice of Sprint Long Distance Packages	$0.07			200 minutes included, $0.07 over 200 minutes	$0.07
Vertical Package (Features Below)	The Works	Essentials	Essentials	Choice of Feature Plans: 3	5	10	MCI Premium Packages available, but not mandatory	
• Anonymous Call Rejection	X	X	X				Choice of 5 or 10	
• Auto Redial	X	X	X			X	Choice of 5 or 10	
• Call Block	X							
• Call Forwarding	X	X	X	X*		X	Choice of 5 or 10	
• Call Forwarding – Busy							Choice of 5 or 10	
• Call Forwarding – Busy & No Answer							Choice of 5 or 10	
• Call Forwarding – No Answer							Choice of 5 or 10	
• Call Return	X	X	X			X	Choice of 5 or 10	
• Call Screening				X*	X	X	Choice of 5 or 10	
• Call Waiting	X	X	X	X*	X	X	Choice of 5 or 10	
• Call Waiting ID	X						Choice of 5 or 10	
• Call Waiting ID Plus							Choice of 5 or 10	
• Caller ID	X	X	X	X*	X	X	Choice of 5 or 10	
• Caller ID (no name)							Choice of 5 or 10	
• Distinctive Ring						X	Choice of 5 or 10	
• Non-listed Number				X*				
• Non-published Number				X*				
• Priority Call	X						Choice of 5 or 10	
• Priority Call Forwarding							Choice of 5 or 10	
• Selective Call Forwarding	X					X		
• Speed Dial 8	X					X	Choice of 5 or 10	
• Three Way Calling	X	X	X	X*	X	X	Choice of 5 or 10	
Voice Mail	X							
Inside Wire Maintenance Plan	X							
Other							Airline Miles or Blockbuster Certificates	
Cost per Month	$39.95 plus installation	$30	$25 plus long distance plan costs	3 Features: $22.95-$25.95 5 Features: $27.95 10 Features: $32.95			No Features: $29.99 5 Features: $40.94 10 Features: $45.94	No Features: $19.99 5 Features: $30.94 10 Features: $35.94

*Choice of Three

Source: Public Utility Commission, Survey of company offerings as of November 28, 2000

Small Business Package Costs Compared to Residential Costs

Given that some of the price drops in the above chart are found among services that business customers may be more likely to use than residential customers, it is also of interest to see how basic service packages for business customers compare to those for residential customers. SWBT appears to be the only major company offering business customers a better price on vertical service packages than the price they offer residential customers for the same services. Table 24 shows how SWBT's BASICS Business Plan offers a package of vertical services to business customers at a better price than it offers to residential customers, who could get the exact same package only by buying each of those services at their respective unbundled rates. SWBT does, however, offer a larger package of vertical services to residential customers at a slightly higher rate that is unavailable to business customers.[89]

Table 24 – A Business/Residential Basic Package Cost Comparison

Company	SW Bell	SW Bell	SW Bell
Package	Business BASICS Plan	Unbundled Residential Services Comparable to the BASICS Business Plan (not a package)	Residential WORKS Package
• Auto Redial	Choice of One	Choice of One	X
• Call Blocker	Choice of One	Choice of One	X
• Call Forwarding	X	X	X
• Call Return	Choice of One	Choice of One	X
• Call Waiting	X	X	X
• Call Waiting ID	X	X	
• Caller ID	X	X	X
• Priority Call			X
• Remote Access to Call Forwarding	X	X	
• Selective Call Forwarding	Choice of One	Choice of One	X
• Speed Calling-8			X
• Three-Way Calling	Choice of One	Choice of One	X
Cost Per Month	$16.95	$18.75-$20.75	$19.95

Source: Public Utility Commission, Survey of company offerings as of November 28, 2000

Internet Access Packages Comparison

Although all of the major telephone companies claim to be moving towards offering bundled voice and data, only SWBT and Sprint are currently offering such packages in Texas. Table 25 examines the differences in these packages. SWBT has organized a number of packages around integrated services, including combining dial tone and long distance with internet access, wireless service, and DIRECTV. None of the other major telephone companies has taken such steps in Texas, although Sprint has announced plans to offer its similar ION service in Dallas and Houston next year. At

[89] All packages are subject to service limitations and may not be available in all areas. All cost figures are above and beyond basic service rates (including dial tone), are subject to fees, taxes, and surcharges, and may vary slightly among areas.

present, Sprint has packaged several long distance plans with internet access, which can be combined with its local service Custom II Solutions plan in a way that is competitive with SWBT's internet access plans.[90]

Table 25 – Comparison of Internet Access Packages for Residential Customers

Company	SW Bell	SW Bell	Sprint	Sprint
Package	DSL Web Solution	Web Solution	7¢ Anytime and Earthlink	1000 Nights and Earthlink
Dial Tone	X	X	Available through Sprint Custom II Solution (not mandatory)	
Long Distance Cost per Minute	$0.06	$0.06	$0.07	1000 minutes included during 7pm – 7am, $0.10 for calls over 1000 minutes and at other times
Vertical Features	Same as SW Bell Phone Solution		Available through Sprint Custom II Solution (not mandatory)	
56k Unlimited Internet Access		X	X	X
DSL	X			
Email Addresses	5-10	11	6	1
Web Site Space	3-6 MB		6 MB	6 MB
Contract	1 year	No	no	no
Other		2nd Phone Line		
Cost per Month	$88.95 plus Installation	$85.95 plus Installation	$19.95 (with no local service) $44.95 (with Sprint Custom II Solution)	$30 (with no local service) $55 (with Sprint Custom II Solution)

Source: Public Utility Commission, Survey of company offerings as of November 28, 2000

Conclusion

Investors provided CLECs with a large amount of money in the form of equity, debt, and bank loans in the late 1990s to challenge well-heeled ILECs across the country. As a result, as seen in Chapter 3, CLECs gained market share in local telephony in the late 1990s in Texas.

In 1998 and 1999, a sizeable number of CLECs entered the Texas market, including a number of well-financed long-distance carriers and start-ups. Some of the investment was speculative, however, as 40 percent stated that they had no customers as of December 31, 1999.

In the seven months from March to October 2000, prices of CLECs' bonds and stocks fell sharply, crimping the funding for sizeable CLECs that had planned to compete in the Texas local voice market. At the same time, SWBT's stock rebounded from its low of calendar year 2000.

[90] All packages are subject to service limitations and may not be available in all areas. All cost figures are subject to fees, taxes, and surcharges, and may vary slightly among areas.

CHAPTER 5: ALTERNATIVE MARKET PROVIDERS

Through most of the 20th Century, the prevailing view of telephony was that wireline was the only means to provide voice telephone services. This monopoly provision of telephone service required that state and federal governments maintain continuing oversight of and intervention in the industry. As technological changes and market forces reinforced by regulation-based price distortions changed the cost and benefits of maintaining monopoly service in voice telephony, state and federal governments responded through legal and regulatory changes. The breakup of AT&T in the 1980s unbundled long-distance voice from local voice services. The federal Telecommunications Act of 1996 created the ground rules for entry of CLECs into local voice telephony, whose entry in turn culminated in SWBT's entry into the long distance market.

Technology is again reshaping the competitive landscape of telecommunications. New technologies such as cable, wireless, satellite, and voice over internet protocol (VoIP) likely will create new avenues and providers for customers to receive traditional local and long distance voice services, profoundly changing the market structure from the customers' point of view. Telecommunication providers will sell local and long-distance voice services as part of a bundled product, where pricing, terms and conditions of voice service will no longer be determined independently of other telecommunications services.

New market segments and technologies, such as wireless telephony, the Internet, and local and long-distance data services are diminishing the importance of long distance and local voice on wireline. J.P. Morgan Securities, in a recent analysis of the telecommunications industry, has estimated that both local and long distance wireline voice, which accounted for about 70 percent of 1999 telecommunication revenues in the United States, will account for only 39 percent of revenues in 2005.[91]

The rise of Internet Protocol as the backbone for wireline telecommunications has the potential to replace the dedicated switched circuit that has been the basis of telephony for the past century. J.P Morgan also projected that information transmitted through the Internet Protocol (IP) alone probably will comprise more than 90 percent of the wireline bit stream in 2005, compared with 13 percent in 1998.[92]

The purpose of this chapter is to discuss alternatives to wireline telephony, not with regard to their technological feasibility, but with respect to their potential to

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[91] J.P. Morgan Securities, Equity Research, *Telecom Services, A Fresh Look at the Industry*, at 4, Table 1 (Sept. 8, 2000).

[92] *Id* at 6.

seriously challenge wireline ILECs for market share. While CLECs and ILECs have deployed most of the alternatives discussed below, their availability at a price that would be competitive to the majority of Texans is limited to one exception: mobile telephony.

This report divides these technologies into three categories: current competitors, coming competitors, and potential future competitors. This report draws from the Commission's recent *Advanced Services Report* to discuss these technologies.[93]

Current Competitor

Currently, wireline voice has one competitor that provides local and long-distance voice at a price and quality that is becoming comparable to that of wireline service: mobile telephony.

Mobile Telephony

In the United States in the twelve months ending December 1999, mobile telephony subscribership increased 24 percent from 69.2 million to 86 million. Eighty-eight percent of the total U.S. population has three or more different operators offering mobile telephone service in the county where they reside. Moreover, 69 percent of the population live in areas with five or more mobile telephone operators offering service.[94]

According to the FCC, nearly one in every three Texans was a mobile telephone subscriber at year-end 1999. In particular, Texas had 0.29 subscribers *per capita*, the same rate as the United States as a whole, as shown in Table 26. Texas also had 0.44 subscribers per end-user wireline, which is comparable to the United States, with 0.42 subscribers per end-user wireline.[95]

The price of mobile telephone service reportedly decreased by 11.3 percent between the end of January 1999 and the end of January 2000. Some reports estimate that the prices fell as much as 20 percent between 1998 and 1999.[96] Further, one analyst claimed that roaming rates per minute have declined. The local average roaming rate per minute fell from $0.75 in the fourth quarter of 1997 to $0.37 in the first quarter of 1999.[97]

At present, concerns about the quality of service of wireless telephony have kept consumers from using wireless telephony as a complete substitute for local wireline service. Fast-growing demand has required companies to invest in large-scale, rapid expansion of their facilities in a short period of time, and the multiple wireless systems in the United States increase the complexity of providing telecommunication service relative to wireless services in Europe.

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[93] Public Utility Commission of Texas, *Report to the 77th Legislature on Advanced Services in Rural and High Cost Areas* (January 2001).

[94] *FCC Releases Fifth Annual Report on State of Wireless Industry*, CC Docket No. 00-289, Report (Rel. August 2000).

[95] Federal Communications Commission, *Local Telephone Competition at the New Millennium*, Tables 4 and 5 (August 2000).

[96] *Id.*

[97] *Id* at 20.

Table 26 – Mobile Telephone Subscribers Reported: Year-End 1999 ** [98]

State	Number of Carriers	Subscribers	Percent of Nation	Population ***	Subscribers per Capita
Alabama	10	1,080,410	1.4 %	4,369,862	0.25
Alaska	5	165,221	0.2	619,500	0.27
Arizona	9	1,125,321	1.4	4,778,332	0.24
Arkansas	5	719,919	0.9	2,551,373	0.28
California	11	8,544,941	10.7	33,145,121	0.26
Colorado	8	1,552,718	1.9	4,056,133	0.38
Connecticut	6	1,077,089	1.4	3,282,031	0.33
Delaware	5	270,848	0.3	753,538	0.36
District of Columbia	5	910,116	1.1	519,000	1.75
Florida	14	5,158,079	6.5	15,111,244	0.34
Georgia	13	2,538,983	3.2	7,788,240	0.33
Hawaii	8	288,425	0.4	1,185,497	0.24
Idaho	4	271,436	0.3	1,251,700	0.22
Illinois	10	3,922,482	4.9	12,128,370	0.32
Indiana	10	1,318,975	1.7	5,942,901	0.22
Iowa	9	774,773	1.0	2,869,413	0.27
Kansas	11	669,472	0.8	2,654,052	0.25
Kentucky	12	911,700	1.1	3,960,825	0.23
Louisiana	9	1,227,106	1.5	4,372,035	0.28
Maine	4	187,003	0.2	1,253,040	0.15
Maryland	7	1,473,494	1.8	5,171,634	0.28
Massachusetts	6	1,892,014	2.4	6,175,169	0.31
Michigan	13	3,512,813	4.4	9,863,775	0.36
Minnesota	13	1,550,411	1.9	4,775,508	0.32
Mississippi	6	673,355	0.8	2,768,619	0.24
Missouri	10	1,855,452	2.3	5,468,338	0.34
Montana	*	*	*	882,779	*
Nebraska	4	576,296	0.7	1,666,028	0.35
Nevada	7	750,335	0.9	1,809,253	0.41
New Hampshire	6	280,508	0.4	1,201,134	0.23
New Jersey	5	2,289,181	2.9	8,143,412	0.28
New Mexico	6	363,827	0.5	1,739,844	0.21
New York	7	4,833,816	6.1	18,196,601	0.27
North Carolina	11	2,536,068	3.2	7,650,789	0.33
North Dakota	*	*	*	633,666	*
Ohio	12	3,237,786	4.1	11,256,654	0.29
Oklahoma	9	826,637	1.0	3,358,044	0.25
Oregon	7	914,848	1.1	3,316,154	0.28
Pennsylvania	12	2,767,474	3.5	11,994,016	0.23
Puerto Rico	*	*	*	3,889,507	*
Rhode Island	6	279,304	0.4	990,819	0.28
South Carolina	7	1,137,232	1.4	3,885,736	0.29
South Dakota	*	*	*	733,133	*
Tennessee	9	1,529,054	1.9	5,483,535	0.28
Texas	20	5,792,453	7.3	20,044,141	0.29
U.S. Virgin Islands	*	*	*	120,917	*
Utah	8	643,824	0.8	2,129,836	0.30
Vermont	*	*	*	593,740	*
Virginia	12	1,860,262	2.3	6,872,912	0.27
Washington	8	1,873,475	2.4	5,756,361	0.33
West Virginia	7	241,265	0.3	1,806,928	0.13
Wisconsin	9	1,525,818	1.9	5,250,446	0.29
Wyoming	4	127,634	0.2	479,602	0.27
Nationwide	76	79,696,883	100.0	276,701,237	0.29

* Data withheld to maintain firm confidentiality.
** Carriers with under 10,000 subscribers in a state were not required to report.
*** Population as of July 1999.

[98] *Local Telephone Competition at the New Millennium*, Federal Communications Commission, Common Carrier Bureau, Industry Analysis Division (August 2000).

Coming Competitors

Three alternatives for voice telephony - cable television (broadband), voice over the Internet, and fixed wireless - are currently available in limited areas. While they do not at present pose a strong competitive challenge to wireline telephony based on dedicated switched circuits, they have the potential in the near future to be viable alternatives for telephone customers.

CABLE TELEVISION

Cable TV has been a part of American homes for decades. A number of CLECs, most prominently AT&T, have sought to commercialize the technology that could provide voice telephony over the same connection that provides cable TV. The technology involved uses the cable modem to split voice telephony from the cable signal, so that the customer would use a telephone rather than the television set to make telephone calls.[99]

Voice telephony over cable is part of a larger plan to provide broadband access that will bundle all telecommunication services into one package (voice, TV, and Internet). The customer would receive one monthly bill, also known as "one-stop shopping." Additional services that cable providers would like to sell to customers in the future include video conferencing and video on demand.

Cable is available in many areas of the United States. Cable infrastructure reaches 70% of American households, some 67 million subscribers. The physical presence of cable in an area alone does not ensure broadband or basic Internet cable modem access. Only 40% of homes with cable have been upgraded to allow broadband access.[100] By July of 2000, 2.27 million residential and small business users were accessing the Internet via cable modems.[101] Projections show that over 3.6 million cable modems will be in use by the end of 2000.[102] This is over a 100% rise this year, and projections indicate a steady though slowing increase over the next few years.

Competition in providing cable services will occur in cities and urban areas where high population density will allow many providers to survive for the next few years, until the next generation of services and technology redefines advanced services. The areas that have neither cable nor telephone access are low density rural areas. Most small cities and many rural communities have cable facilities in Texas. Yet these systems still

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[99] This technology is distinct from Voice over Internet Protocol discussed below.

[100] Cable Modem Market Stats & Projections. Cable Datacom News, March 3, 2000. http://www.cabledatacomenws.com/cmic/cmic16.html. *See also* Annual Assessment of the Status of Competition in Markets for the Delivery of Video Programming, Sixth Annual Report. CC Docket No. 99-230 (Jan. 14, 2000).

[101] "NCTA Reports Fast Growth in Cable Modem, Telephony Rollouts." *Telecommunications Report Daily* (July 26, 2000). http://www.tr.com.

[102] "NCTA Reports Fast Growth in Cable Modem, Telephony Rollouts." *Telecommunications Report Daily* (July 26, 2000). http://www.tr.com.

service only areas where population density is large enough to support building the initial infrastructure.

VOICE OVER INTERNET (VOIP)

Internet Protocol (IP) has revolutionized data communications worldwide. As the speed and reliability of the Internet improve, it is relatively easy to communicate using VOIP. Voice transmission has been digitized on telecommunications carrier networks in some cases since the 1960s, and encoding voice messages over the Internet is a natural progression. There are many varieties of VOIP in use today, from rudimentary connections between two computers to sophisticated corporate interconnections. Today's VOIP status should generally be viewed as an emerging application, used by a growing number of customers with varying degrees of satisfaction.

VOIP relies more on the packet-switched Internet rather than the circuit-switched telephone network, and "lost," retransmitted, or otherwise delayed packets are more disruptive to voice calls than they are to data transmission. As a result, customer satisfaction with VOIP calls varies. However, as technology progresses, VOIP is expected to account for increased traffic. According to an analyst with U.S. Bancorp, VOIP, which accounted for less than 1% of global telecom traffic in 1999, is expected to surge to 17% by 2003 and more than 30% by 2005.[103]

In Texas in the fall of 2000, SBC Communications, Inc., proposed to provide an IP phone system for the city government of Dallas. SBC Communications claimed that voice quality should not be an issue in the city's network because phone traffic will have a priority over data.[104]

FIXED WIRELESS

Fixed wireless is a system that provides high-speed services to customers by attaching to the customer's premises a radio transmitter/receiver (transceiver) that communicates with the provider's central antenna site. By doing so, the central antenna site acts as the gateway into the public switched telephone network or the Internet for the transceivers. Basically, the radio signals serve as a substitute for the copper wire or cable strand that connect customers to the network in traditional, wired technologies.

The market for fixed wireless services is expected to reach about $1 billion by the end of 2002, according to market researcher Gartner Group. Analysts expect the national fixed wireless market to grow significantly in the next three to five years, with projections estimated at 2.0 to 2.6 millions subscribers by 2003.[105]

In geographic areas with limited cable or telephone infrastructure, as in some rural areas of Texas and the rest of the United States, providers can deploy a fixed

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[103] Special Report – The Talking Internet, BusinessWeek Online, May 1, 2000, http://www.businessweek.com/2000/00_18/b3679024.htm.

[104] "SBC Proposes High-Tech Phone System for Dallas," *Dallas Morning News* (October 24,2000).

[105] Peter Jarich and Mendelson, James, *U.S. Wireless Broadband* at 243, 252, and 262; Strategies Group, *High-Speed Internet Report* at 131 (Nov. 8, 2000), http://www.strategisgroup.com/.

wireless network faster and cheaper than a xDSL or cable modem system. While infrastructure costs of wireless networks may be significantly less than those of wireline networks, wireless networks incur substantial costs acquiring spectrum.

In the year 2000 fixed wireless saw an improved competitive position as an alternative to local fixed wireline service in Texas when the Commission designated Western Wireless Corporation as an Eligible Telecommunications Carrier (ETC) and an Eligible Telecommunications Provider (ETP). The Commission action put the company one step closer to offering local service in certain rural areas of Texas.

Potential Future Competitors

The following technologies could have the potential to offer local and long distance service in the future, but currently are not ready for commercial application. If either or both applications become commercially viable in the future, Texas customers would have additional alternative means of delivery of telephone service that could increase the level of competition in voice telephony.

Satellite

Traditional satellite networks have been limited to specialized private VSAT (very small aperture terminal) networks, low bandwidth services and DTH (direct-to-home) video, but new broadband satellite systems are offering service comparable to current broadband terrestrial services. Satellite services can include any fixed multimedia service, from Internet access, local telephony, cable, video transmission, private business networks, telemedicine, teleeducation, and video conferencing.

Service to whole regions, reaching low subscriber-density areas without costly construction of terrestrial networks, gives satellite technology a promising future. Today, however, most current residential satellite offerings provide information in only one direction, downstream into the home of the user. The user needs a standard dial-up connection to send information upstream. Several satellite providers have announced plans to provide residential service with both downstream and upstream paths via satellite.

Electricity Transmission Lines for Telecommunications

In the future, consumers may have access to voice telephony and the Internet using the electric grid. Two companies, Northern Telecom and Norweb Communications, have been developing the means to send vast amounts of data along power lines without distortion from electric current. In the future, every home in the country could have a second telephony wireline connection, increasing competition for telecommunication providers.

The system works by using either fiber-optic or radio links to transmit data from the Internet to local electricity sub-stations. The low-voltage part of the electricity network then becomes a local area network. A small box is installed next to the electricity meter in the home to send and receive data. The box itself is connected by ordinary cable

to personal computers, which will need to be fitted with a special card and software. The new technology eventually could enable the introduction of applications such as electronic commerce, telenetworking, web broadcast media, entertainment, and Internet telephony on a mass-market scale.

Conclusion

Mobile telephony is just the beginning of the technological transformation of the traditional voice telephony market. While Commission data suggest that CLECs have increased their market share in wireline service in Texas from a very low base, CLECs have not dislodged the predominance of ILECs in wireline telephony. Advances in telecommunications, however, offer the chance for a much more powerful form of competition in the future using methods of delivering local telephony without a large, well-financed incumbent to challenge directly for market share.